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The chapter on the natural history of the forest contains an interesting discussion of the physical and biological relations of trees and forests. Other general topics treated are silviculture, forest economy, forest policy, forest policies of foreign nations, forest conditions, and the forestry movement in the United States. The book is not intended as a popular discussion, but to supply a lack in the professional literature of economics in the English language. It is interestingly written and embodies so much general knowledge that it deserves to have a wide circulation.

UNDER THE general title *Wood*, Boulger² has collected in one volume many facts concerning both the scientific and commercial aspects of the subject. In the first chapter the origin, structure, and development of wood and the uses of wood are discussed. Then follows a comprehensive and valuable key for the determination of woods. Of more than usual interest is the treatment of the defects of woods, the selection, seasoning, storage, and durability of woods, the application of special woods, and supplies of wood. In part two is found an alphabetical list of woods, with facts concerning their sources, character, and uses.—H. N. WHITFORD.

MINOR NOTICES.

POSTELSIA³ is a collection of seven botanical essays, four of which are phycological in character. The first is the *Uses of marine algae in Japan*, by K. YENDO. There are probably no people that make such extensive use of seaweeds as the Japanese. We are given a list of perhaps twenty-five forms that have a place in the life, principally of the peasantry, some as staple foods and others as delicacies, condiments, and decorative plants. There is even an extensive export trade, chiefly with China, for laminaria and agar-agar, which amounts to more than 30,000,000 lbs. a year. With each form is a brief account of its uses and the paper is illustrated with three Japanese prints. *Algae collecting in the Hawaiian Islands*, by JOSEPHINE E. TILDEN, is a very readable account of a summer spent among these islands, whose marine flora, rich in green and red algae, presents the sharpest sort of contrast to the luxuriant brown algae of the Pacific coast. Yendo has a second paper entitled *The distribution of marine algae in Japan*. He describes the varied ocean currents that bathe the Japanese archipelago and give to it such great extremes of temperature that a sub-arctic marine flora may be found almost side by side with a tropical. Japan with its bold shores and many bays and indentations furnishes wonderful variations in conditions, and will prove a magnificent field for a study of the factors that determine the distribution of algae. There

²BOULGER, G. S., *Wood*, a manual of the natural history and industrial application of the timber of commerce. 8vo. pp. viii + 369, *figs.* 66. *pls.* 4. London: Edward Arnold. 1902. \$3.00.

³POSTELSIA. *The Year Book of the Minnesota Seaside Station*. 1901. 8vo. pp. 220. *pls.* 26. St. Paul: The Pioneer Press. 1902.

is also a brief account of the marine laboratory at Misaki. The last essay is by Professor MacMillan on *The kelps of Juan de Fuca*. There are seventeen genera of kelps found in the Straits of Fuca, which is more than half of the total number in the Laminariales. The habits and many of the structural peculiarities of these are described in a popular style and illustrated with several excellent figures.—B. M. DAVIS.

PROFESSOR MÖBIUS⁴ has published in book form his laboratory directions for beginners. The book contains eighteen exercises, each intended to occupy about three hours. Directions are given for making sixty-five preparations, of which forty-two are phanerogams and twenty-three cryptogams. Almost without exception, the methods are those employed for examining fresh material, no microtome being used and almost no attention being given to imbedding or staining. In this country subject-matter like that contained in this book is usually presented by the teacher in the laboratory
CHARLES J. CHAMBERLAIN.

NOTES FOR STUDENTS.

MONTEVERDE⁵ states, in a preliminary notice, that protochlorophyll is not a yellow pigment, but is like chlorophyll in color and fluorescence. Etiolated leaves contain a certain amount of this substance, which begins to go over into chlorophyll as soon as these are brought into the light. In light, protochlorophyll is formed as fast as it changes into chlorophyll, and if green plants are placed in darkness this process sometimes continues until the green of the leaves is heightened by the accumulation of the former compound.—BURTON E. LIVINGSTON.

MOLISCH⁶ finds the phosphorescent bacterium, *Micrococcus phosphoreus* Cohn, to be common and widely distributed instead of rare and sporadic as generally supposed. It is found upon meats in refrigerators and cold-storage houses, abattoirs, butcher shops, and kitchens into which flesh of slaughtered animals is regularly brought. To secure this species for study it suffices to dip a piece of fresh beef, veal, or pork into a 3 per cent. NaCl solution, to lay it in a dish half immersed in the same solution and keep it at 9–12° C. in a moist chamber. 89 per cent. of beef tested in this way showed luminescence. As the species dies quickly at the temperature of the human body it probably cannot be injurious if eaten. A revised description is given with illustrations.—C. R. B.

⁴ MÖBIUS, M., Botanisch-mikroskopisches Praktikum für Anfänger. 8vo. pp. ix + 2. figs. 12. Berlin: Gebrüder Borntraeger. 1903.

⁵ MONTEVERDE, N. A., Das Protochlorophyll und Chlorophyll. Bull. Jard. Imp. Bot. St. Petersburg 2: 181–182. 1902.

⁶ MOLISCH, HANS, Ueber das Leuchten des Fleisches, insbesondere todtten Schlachttiere. Bot. Zeit. 61¹: 1–18. figs. 5. 1903.